

DOE F 1325.8
(GB-93)

United States Government

Department of Energy

Memorandum

OFFICE OF INSPECTOR GENERAL

DATE: February 26, 2003
REPLY TO:
ATTN OF: IG-34 (A02CG004) Audit Report No.: OAS-L-03-11
SUBJECT: Audit of the Office of Science Infrastructure Modernization Initiatives
TO: Acting Associate Director, Office of Laboratory Operations and Environment,
Safety and Health, SC-80

The purpose of this report is to inform you of the results of our audit of the Office of Science's infrastructure modernization initiatives. The audit was performed between May and September 2002 at Departmental Headquarters, Brookhaven National Laboratory, and Argonne National Laboratory. The audit methodology is described in an attachment to this report.

INTRODUCTION AND OBJECTIVE

Each year since the Department's Fiscal Year 2000 Performance and Accountability Report, the Office of Science (Science) has identified the deterioration of its facilities as a Departmental Challenge. Science noted that the Department risks not being able to conduct world class science if the condition and functionality of its facilities are not addressed.

To resolve its Departmental Challenge, Science planned a series of corrective actions designed to modernize its infrastructure and eliminate or satisfy its deferred maintenance. These actions included developing various plans to identify needs and to support a Congressional budget submittal that would reflect those needs. In light of the planned corrective actions, our audit objective was to determine whether Science has made progress in its efforts to modernize its infrastructure.

CONCLUSION AND OBSERVATIONS

Science had taken a number of steps necessary to modernize its laboratories but may not be successful in obtaining the funding necessary to fully implement modernization. Specifically, Science laboratories prepared Ten-Year Strategic Facilities Plans to address infrastructure modernization needs in support of the Science missions. In addition, the Office of Science prepared an Infrastructure Frontier report to summarize the modernization needs identified in the strategic facilities plans and a Modernization Roadmap that provided various funding plans for addressing those modernization needs.

In the absence of likely future funding increases to implement modernization, the Office of Science may wish to explore expanded use of alternative financing mechanisms to achieve its goals for modernization. For example, Oak Ridge National Laboratory plans to revitalize its aging infrastructure by incorporating private sector and State of Tennessee funds along with available Department of Energy funds.

A response to this report is not required. We appreciate the cooperation of your staff during our review.



Rickey R. Hass, Director
Science, Energy, Technology,
and Financial Audits
Office of Audit Services
Office of Inspector General

Attachment

cc: Director, Laboratory Infrastructure Division, SC-82
Audit Liaison, Office of Science, SC-62
Audit Liaison, Office of Executive Operations and Support, ME-2.1

Attachment

METHODOLOGY

To accomplish our objective, we:

- Evaluated the Office of Science's Infrastructure Modernization Initiative and the corrective actions to address the Departmental Challenge.
- Obtained and reviewed applicable Departmental requirements for property, plant, and equipment as well as Departmental orders pertaining to life-cycle asset management and maintenance and held discussions with the Department's Office of Engineering and Construction Management officials.
- Held discussions regarding the Infrastructure Modernization Initiative and related plans with Headquarters and field officials.
- Held a discussion with the Department's Office of Planning and Analysis regarding any of their studies of the Department's infrastructure maintenance and modernization.
- Held a discussion with a National Research Council official regarding any studies on federal infrastructure and maintenance benchmarks.

We also obtained and reviewed Ten-Year Strategic Facilities Plans, maintenance plans, performance criteria and measures, condition assessment survey reports, and held discussions with responsible contractor officials. In addition, we reviewed contractor data on maintenance and deferred maintenance and compared these amounts with those entered in the Facilities Information Management System.

The audit was conducted in accordance with Government Auditing Standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. To accomplish the audit objective, we utilized computer-processed data for background or informational purposes only, and the reliability of the data was not vital to our audit results. Accordingly, we concluded that citing the data source in the report and ensuring that the data were the best available will satisfy the reporting standards for accuracy and completeness. An exit conference was held on November 25, 2002.

Memorandum

OFFICE OF INSPECTOR GENERAL

DATE: December 31, 2002
REPLY TO: IG-30 (A02CG004)
SUBJECT: Draft Report on "Office of Science Infrastructure Modernization Initiatives"
TO: Director, Office of Science, SC-1

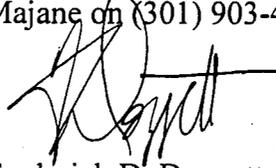
Attached for your review and comment is a copy of our draft report on the subject audit. The audit was performed at Department Headquarters, Brookhaven National Laboratory, and Argonne National Laboratory.

Please review the information in this draft and provide written comments within 15 working days on the facts presented, conclusions reached, appropriateness of the recommendations, and reasonableness of the estimated potential monetary impact or other benefits that may be realized. If you agree with the recommendations, please state the corrective actions taken or planned and the actual or target dates for the actions. Your comments should discuss alternative recommendations if you know of better ways to solve the problems discussed in the report. If you submit alternatives, please estimate the potential benefits to be realized from these alternative actions.

The Office of Inspector General (OIG) will make every effort to include management's comments in their entirety in the final report. Management should limit its comments to no more than two pages, with more detailed comments addressed in an attachment. The OIG will review the comments submitted by management and address relevant comments in the final report or revise the report, if appropriate. The content of the final audit report is the responsibility of the OIG.

This draft report is subject to change and does not represent the final position of the OIG. Therefore, the contents shall be safeguarded at all times to prevent improper disclosure. The draft report should not be provided to anyone outside the Department without the express approval of the Inspector General. In this context, management and operating contractors shall be considered to be part of the Department. DOE Order 221.3 states that all copies of the draft report remain the property of the OIG and shall be returned on demand.

We will contact you shortly to arrange a meeting on the subject report. Your cooperation will be greatly appreciated. If you have any questions, please call John Yi on (301) 903-2601 or Kevin Majane on (301) 903-4065.



Frederick D. Doggett
Deputy Assistant Inspector General
for Audit Services
Office of Inspector General

Attachment

cc: Audit Liaison, Office of Science
Audit Liaison, Chicago Operations Office
Team Leader, ME-2.1



U.S. Department of Energy
Office of Inspector General
Office of Audit Services

Infrastructure Series

Draft Audit Report

Office of Science Infrastructure
Modernization Initiatives

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

Science, Energy, Technology,
and Financial Audits
Germantown, Maryland 20874

DRAFT

MEMORANDUM FOR THE DIRECTOR, OFFICE OF SCIENCE

FROM: Rickey R. Hass
Director, Science, Energy, Technology and Financial Audits
Office of Audit Services
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Office of Science
Infrastructure Modernization Initiatives"

BACKGROUND

The Department of Energy plays a unique role in supporting the nation's research activities by constructing, operating, and maintaining major research facilities that are accessible to the scientific community. These facilities have been regarded as national treasures and include major scientific instruments and ten national laboratories. Combined, the laboratories' operating budgets exceed \$3 billion annually. Laboratory infrastructure includes about 2,500 buildings containing over 20 million square feet of space with a replacement value of over \$13 billion. More than 20,000 scientists, engineers, and technicians perform cutting-edge experiments and research to fulfill the Department's various missions.

For the past several years, the Department has identified the deterioration of its science facilities as a major challenge, noting that the degradation of these facilities could eventually affect the Department's ability to conduct world-class science. The Office of Science reported that nearly 70 percent of its laboratory complex was over 30 years old and 50 percent of its work spaces were inadequate, and concluded that these issues would impact productivity, research reliability, and the ability to attract and retain top-quality scientific talent. The Department identified a backlog of over \$1 billion dollars in general purpose infrastructure projects needed to modernize its laboratories and also report over \$700 million in deferred maintenance.

To address these concerns, Science planned a series of corrective actions designed to modernize its infrastructure and eliminate or satisfy its deferred maintenance. These initiatives included the development of strategic plans and performance measures. We initiated this audit to determine whether Science had made progress in these efforts.

RESULTS OF AUDIT

While Science had taken a number of positive steps, additional action was necessary to ensure a fully successful laboratory modernization effort. For example, Science had not completed modernization plans even though it recognized the need for additional investment in its infrastructure more than two years ago. Also, actions taken to assess site-level modernization needs were not based on firm criteria and resulted in inconsistent data submissions. Science also had not developed performance measures to guide its efforts to achieve necessary modernization. Without adequate plans or performance

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management goals, the Department lacked the tools necessary to focus scarce capital investment funding on the most critical Science facilities or projects.

The Department has taken some action to improve infrastructure modernization efforts. Specifically, Office of Science officials told us that based on Departmental budget guidance, they plan to increase infrastructure funding to meet industry standards for maintenance spending. We made a number of recommendations designed to assist the Department as it pursues these and other infrastructure improvement initiatives.

This report is one in a series that the Office of Inspector General has prepared regarding aspects of the Department's efforts to address its infrastructure requirements. For the past several years, our office and other reviewers have noted that mission-critical infrastructure has been deteriorating at an alarming rate and that required maintenance was often not being performed. Our other reports discuss infrastructure issues facing the Department's Environmental Management and National Nuclear Security Administration program areas.

MANAGEMENT REACTION

To be added.

Attachment

cc: Audit Liaison, SC-62
Team Leader, Audit Liaison, ME-2.1

OFFICE OF SCIENCE INFRASTRUCTURE MODERNIZATION INITIATIVES

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Modernization Initiatives

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MODERNIZATION INITIATIVES

Modernization Planning

Despite initial progress, The Office of Science (Science) had not adopted or implemented an infrastructure modernization plan almost two years after it recognized the issue as a Departmental challenge. Even though it collected and published a compilation of infrastructure related data entitled "Infrastructure Frontier: A Quick Look Survey of the Office of Science Laboratory Infrastructure," it did not develop an overall modernization plan. Science did not accept, reject, or prioritize needs outlined in the Strategic Facilities Plans nor commit to their support. In addition, funding requests necessary to address the needs were never developed. Science indicated that it did not act on the data because it was not based on firm criteria and was internally inconsistent. In some instances, Federal and contractor officials told us that the list of projects represented a "wish list" rather than a critical assessment of modernization needs. Despite a commitment to do so in Fiscal Year 2002, Science had not completed its modernization plan by fiscal year end.

Planning Guidance and Performance Goals

While Science recognized that accurate site-level data was critical for prioritizing modernization initiatives among its laboratories, it did not provide criteria for the collection of data or correct original submissions. For example, Science did not specify criteria to ensure that its laboratories consistently report deferred maintenance, actual maintenance, or estimated replacement plant value (RPV) necessary to evaluate the adequacy of maintenance investments and the condition of facilities. Brookhaven's estimate of deferred maintenance exceeded \$300 million because it included the cost of major renovations to its facilities. In contrast, Argonne, similar to Brookhaven in size and age, defined deferred maintenance somewhat differently and reported needs of less than \$20 million. Also, Argonne and Brookhaven used different bases to report actual maintenance costs for their facilities. Brookhaven reported over \$36 million in direct funded maintenance costs while Argonne reported none at all. In addition, RPV was calculated at Argonne using historical costs of facilities while Brookhaven used a parametric model.

In addition, Science had not fully developed performance measures to guide completion of its modernization initiatives. Although Science established a goal to fully modernize its laboratories over a ten-year period, the measure focused solely on reducing the recapitalization period. This measure focused on inputs and did not measure modernization outcomes actually achieved. Furthermore, neither Argonne nor Brookhaven adopted a measure that would support Science's goal to reduce the recapitalization period. The only infrastructure related goal established at Argonne was a measure to adhere to the annual maintenance plan. Brookhaven established two performance measures; however, neither focused on reducing the recapitalization period.

Science Mission Impacts

The lack of investment in infrastructure and the failure to adopt a plan have created obstacles to effectively managing the Science program. As noted by the Office of Science, the Department is at risk of not being able to conduct world class science if the condition and functionality of its facilities are not addressed. Science officials also indicated that infrastructure conditions have made it more difficult to recruit and retain scientific talent. Without additional action and consistent infrastructure information, neither the Department nor the Office of Science has an accurate basis to evaluate the adequacy of its maintenance investments or the condition of its facilities.

RECOMMENDATIONS

We recommend that the Director, Office of Science:

1. Expedite the completion and adoption of a plan to modernize the national laboratories.
2. Establish a single set of criterion to be used by all of the national laboratories when reporting information related to Science infrastructure.
3. Establish specific, quantifiable performance measures to track the success of modernization initiatives.

MANAGEMENT REACTION

To be added.

AUDITOR COMMENTS

To be added.

APPENDIX 1

SCOPE AND METHODOLOGY

SCOPE

The audit was performed between May and September 2002, at Department Headquarters in Washington, DC, and Germantown, MD. In addition, on-site fieldwork was performed at Brookhaven National Laboratory, NY, and Argonne National Laboratory, IL.

METHODOLOGY

To accomplish our objective, we:

- Evaluated the Office of Science's Infrastructure Modernization Initiative and the corrective actions to address the Departmental challenge.
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necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. To accomplish the audit objective, we utilized computer-processed data for background or informational purposes only, and the reliability of the data was not vital to our audit results. Accordingly, we concluded that citing the data source in the report and ensuring that the data were the best available will satisfy the reporting standards for accuracy and completeness.

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APPENDIX 2

PRIOR REPORTS

- *Special Report: Management Challenges at the Department of Energy* (DOE/IG-0538, December 2001). The report stated that a key challenge to the Department is that the condition of the Department's infrastructure is deteriorating at an alarming pace and may be inadequate in the future to meet mission requirements.
- *Audit Report: Recruitment and Retention of Scientific and Technical Personnel* (DOE/IG-0512, July 2001). The report stated that the Department has been unable to recruit and retain critical scientific and technical staff in a manner sufficient to meet identified mission requirements. As a result, the Department may not have the Federal scientific and technical expertise to effectively administer the work of its contractors. In such an environment, there is an increased risk of a variety of management problems.
- *Audit Report: Management of the Nuclear Weapons Production Infrastructure* (DOE/IG-0484, September 2000). The report stated that the production infrastructure had seriously degraded. Preventive and predictive maintenance had not been performed when scheduled. As a result, the Department's defense complex was comprised of aging facilities that required increased maintenance and upgrades that were delayed to future periods.
- *Audit Report: Facility Maintenance at the Idaho National Engineering and Environmental Laboratory* (WR-B-01-04, March 2001). The report stated that the Idaho Operations Office has not maintained its facilities in a safe and economical manner. A sample of work orders for preventive maintenance revealed that 51 percent were not completed by the requested due date, and facility problems were often related to untimely completion of maintenance work orders.
- *U.S. Infrastructure: Funding Trends and Opportunities to Improve Investment Decisions* (GAO/RCED/AIMD-00-35, February 2000). The report stated that the amount of federal spending devoted to infrastructure shows a continuous downward trend after Fiscal Year 1987 while the spending by state and local governments is continuing an upward trend that began in the 1980s and exceeds federal spending in certain categories.
- *Federal Buildings: Billions are Needed for Repairs and Alterations* (GAO/GGD-00-98, March 2000). The report stated that GSA has struggled over the years to meet the repair and alteration requirements identified at its buildings.

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MONETARY IMPACT REPORT

MONETARY IMPACT OF REPORT NO.:

1. Title of Audit: Audit of the Office of Science Infrastructure Modernization Initiatives

2. Region/Office: Science, Energy, Technology, and Financial Audits

3. Project No.: A02CG004

4. Type of Audit:

Financial:	_____	Performance:	<u> X </u>
Financial Statement	_____	Economy and Efficiency	_____
Financial Related	_____	Program Results	<u> X </u>
Other (specify type):	_____		

5.

FINDING		BETTER USED			QUESTIONED COSTS			MGT. POSITION	POTENTIAL BUDGET IMPACT	
(A)	(B) Title	Ⓒ One Time	Recurring			(G) Questioned Portion	(H) Unsupported Portion	(I) Total	(J) C=Concur N=Noncon U=Undec	(K) Y=Yes N=No
			(D) Amount Per Year	(E) No. Yrs.	(F) Total Amount					
	N/A				N/A			N/A		
TOTALS—ALL FINDINGS		\$0	\$0		\$0	\$0	\$0	\$0		

6. Remarks: There is no current monetary impact or potential future savings.

7. Contractor: _____
 8. Contract No.: _____
 9. Task Order No.: _____

10. Approvals:
 Division Director & Date _____
 Technical Advisor & Date _____



Department of Energy

Washington, DC 20585

January 23, 2003

MEMORANDUM FOR FREDERICK D. DOGGETT
DEPUTY ASSISTANT INSPECTOR GENERAL FOR
AUDIT SERVICES

FROM:

JOHN RODNEY CLARK 
ASSOCIATE DIRECTOR OF SCIENCE FOR
RESOURCE MANAGEMENT

SUBJECT:

Comments on IG Draft Report, "Office of Science Infrastructure
Modernization Initiatives"

The Office of Science (SC) staff has reviewed the subject report and submits the following comments. For the most part, SC agrees with the observations and recommendations in the draft report, provided that the final version incorporates the following suggested changes.

Page 1 of the draft memorandum, last paragraph:

- **Fifth line:** The following sentence is inaccurate and should be deleted: "... site-level modernization needs were not based on firm criteria and resulted in inconsistent data submissions." Although each SC laboratory was provided flexibility in determining their respective needs in order to achieve Laboratory of the 21st Century status, Dr. Decker, in memoranda to the field in August 2000, provided detailed guidance outlining consistent information that was to be supplied in the Strategic Facilities Plans.

Page 1 of the draft report, "Modernization Planning" paragraph:

- **Third line:** The following sentence should be modified to state that an overall modernization plan was developed: "Even though it collected and published a compilation of infrastructure related data entitled "Infrastructure Frontier: A Quick Look Survey of the Office of Science Laboratory Infrastructure," it did not develop an overall modernization plan." SC did develop a 'Roadmap' which included several options for addressing the needs identified in the Frontier Report. This Roadmap is providing guidance for ongoing budget deliberations within SC.
- **Fifth line:** The following sentence is inaccurate and should be deleted: "Science did not accept, reject, or prioritize needs outlined..." The statement is incorrect because the proposed line item projects were vetted with the SC Program Associate Directors and their representatives in several meetings. Proposed projects which were agreed upon



were prioritized by fiscal year and by laboratory and included in the Infrastructure Frontier report. Some proposed line item projects were rejected and not included in the report.

- **Seventh line:** The following sentence is inaccurate and should be deleted: “In addition, funding requests necessary to address the needs were never developed.” SC submitted an increased infrastructure funding request in the Science Laboratories Infrastructure Program (based on information in the Roadmap) to OMB, and it was rejected by OMB due to overall budgetary constraints.
- **Ninth line:** The sentence with “wish list” should be deleted. SC has considered the accepted and prioritized list of projects as a plan to accomplish the modernization of SC laboratories over a ten year period. Clearly, funding realities are such that we can not accomplish modernization over ten years—it will have to be much longer.

Other factual accuracy items, obtained from recent reports from the Facilities Information Management System (FIMS), should also be incorporated into the final version of the document as follows:

- Under “Background,” first paragraph:
 - change the number of buildings to 1,553
 - change “over 20 million” to “almost 20 million”
 - change the replacement value to \$6 billion
- Under “Background,” second paragraph:
 - change “nearly 70 percent” to “over 65 percent”
 - change “50 percent of it work spaces were inadequate” to “20 percent of active building space is rated fair or lower”
 - change “\$700 million in deferred maintenance” to “\$400 million in deferred maintenance for active buildings in FY 2002.”
- Under the Modernization Initiatives section, Planning Guidance and Performance Goals, first paragraph:
 - change “\$300 million” to “\$200 million in FY 2002”
 - change “\$20 million” to “\$40 million in FY 2002”

We hope you find these comments helpful as you finalize the report. If you have any questions concerning these comments, please contact Steven Rossi at 3-5534.

Memorandum

OFFICE OF INSPECTOR GENERAL

DATE: MAR 3 2003

REPLY TO: IG-34 (A02CG004)

SUBJECT: Final Report Package for "Audit of the Office of Science Infrastructure
Modernization Initiatives" Audit Report No.: OAS-L-03-11

TO: Frederick D. Doggett, Deputy Assistant Inspector General for Audit Services

Attached is the required final report package on the subject audit. The pertinent details are:

1. Actual Staff days: 201

Actual Elapsed days: 289

2. Names of OIG and/or contractor audit staff:

Assistant Director: George W. Collard

Team Leader: Kevin Majane

Auditor-in-Charge: John Yi

Audit Staff: Michelle Mathews, Stacy Bleigh

3. Coordination with Investigations and Inspections:

Vera Shepard and Brenda Froberg of Investigations and Henry Minner of Inspections
on May 06, August 02, and November 19, 2002.



Rickey R. Hass, Director
Science, Energy, Technology,
and Financial Audits
Office of Audit Services
Office of Inspector General

Attachments:

1. Final Report (3)
2. Monetary Impact Report
3. Audit Project Summary Report
4. Audit Database Information Sheet

MONETARY IMPACT OF REPORT NO.: OAS-L-03-11

1. Title of Audit: Audit of the Office of Science Infrastructure Modernization Initiatives2. Region/Office: Science, Energy, Technology, and Financial Audits3. Project No.: A02CG004

4. Type of Audit:

Financial: _____ Performance: X
 Financial Statement _____ Economy and Efficiency _____
 Financial Related _____ Program Results X
 Other (specify type): _____

5.

FINDING		BETTER USED				QUESTIONED COSTS			MGT. POSITION	POTENTIAL BUDGET IMPACT
(A)	(B) Title	© One Time	Recurring			(G) Questioned Portion	(H) Unsupported Portion	(I) Total	(J) C=Concur N=Noncon U=Undec	(K) Y=Yes N=No
			(D) Amount Per Year	(E) No. Yrs.	(F) Total Amount					
	N/A				N/A			N/A		
TOTALS—ALL FINDINGS		\$0	\$0		\$0	\$0	\$0	\$0		

6. Remarks: There is no current monetary impact or potential future savings.

7. Contractor: _____

10. Approvals:

8. Contract No.: _____

Division Director
& Date SLA 3/3/03

9. Task Order No.: _____

Technical Advisor
& Date Shu

Office of the Inspector General (OIG)
 Audit Project Office Summary (APS)

Report run on: February 28, 2003 8:10 AM

Audit#: A02CG004 Ofc: FOA Title: SCIENCE INFRASTRUCTURE

**** Milestones ****

	----- Planned -----	----- Actual -----		
	Profile	End of Survey	Revised	
Entrance Conference:	15-SEP-02	13-MAY-02	13-MAY-02	13-MAY-02
Survey Completed:	15-NOV-02	02-AUG-02	02-AUG-02	02-AUG-02
Field Work Complete:				
Draft Report Issued:				20-NOV-02
Exit Conference:				
Completed with Report:	15-JUN-03	02-AUG-02	02-AUG-02	26-FEB-03 (R)
-----Elapsed Days	273	81		289
-----Staff Days:	360	0		201
Date Suspended:		Date Terminated:		
Date Reactivated:		Date Cancelled:		
DaysSuspended(Cur/Tot):	0 ()	Report Number:	OAS-L-03-11	
Rpt Title: AUDIT OF THE OFFICE OF SCIENCE INFRASTRUCTURE MODERNIZATION INITIATIVES				

**** Audit Codes and Personnel ****

Aud Type:	Not Found			
Category:	Not Found	AD:	530	MAJANE
DOE-Org:	HST HEADQUARTERS, OFFICE	AIC:	796	YI
Maj Iss:	Not Found	HDQ-Mon:	421	SCHULMAN
Site:	Not Found	ARM:	459	COLLARD

**** Task Information ****

Task No:		CO Tech. Rep:	
Task Order Dt:		Orig Auth Costs:	
Orig Auth Hrs:		Current Auth Cost:	
Current Auth:		Tot Actl IPR Hr:	
Tot Actl IPR Hr:		Tot Actl Cost:	

**** Time Charges ****

Emp/Cont Name	Numdays	Last Date
BOOS, B	0.1	22-FEB-03
STINE, S	0.8	28-DEC-02
BLEIGH, S	6.6	19-OCT-02
MAJANE, K	48.8	02-NOV-02
YI, J	144.9	22-FEB-03
Total:	201.2	

AUDIT DATABASE INFORMATION SHEET

1. Project No.: A02CG004
2. Title of Audit: Audit of the Office of Science Infrastructure Modernization Initiatives
3. Report No./Date: OAS-L-03-11, February 26, 2003
4. Management Challenge Area: Infrastructure and Asset Management
5. Presidential Mgmt Initiative: N/A
6. Secretary Priority/Initiative: N/A
7. Program Code: GSR
8. Location/Sites: Headquarters, Argonne National Laboratory (ANL-E), Brookhaven National Laboratory (BNL)
9. Finding Summary:

Science had taken a number of steps necessary to modernize its laboratories but may not be successful in obtaining the funding necessary to fully implement modernization. Specifically, Science laboratories prepared Ten-Year Strategic Facilities Plans to address infrastructure modernization needs in support of the Science missions. In addition, the Office of Science prepared an Infrastructure Frontier report to summarize the modernization needs identified in the strategic facilities plans and a Modernization Roadmap that provided various funding plans for addressing those modernization needs.

In the absence of likely future funding increases to implement modernization, the Office of Science may wish to explore expanded use of alternative financing mechanisms to achieve its goals for modernization. For example, Oak Ridge Operations Office plans to replace aging infrastructure through a development process that uses private-sector capital and expertise by the Department of Energy, Oak Ridge National Laboratory, and the operating contractor.

10. Keywords:

Office of Science
Infrastructure and Asset Management
Maintenance
Infrastructure Modernization